massDOT Massachusetts Department of Transportation Rail & Transit Division

Massachusetts Bay Transportation Authority

Verification	Originator	Revised	Approved	Issued
Title	Mgr. Energy Efficiency		Director of Env.Compliance	
Initials	MAD		JOOK	JOK
Date	12/4/2013		2/2/2015	2/9/2015

ED-4.3.1-2 Evaluation of Aspects and Impacts Matrix

				Environmental Significance				Business Significance										
			Category	Scale of Impact	Severity of Impact	Probability of Occurrence	Duration of Impact	Legal Exposure	Ease of Change	Public Image	Effect On Sustainability	Interested Parties	Cost of changing impact		Control & Influence	Mandatory	Priority #	Significant Aspect
			Explanation	What is the relative size of the impact	How bad is the adverse environmental consequence caused by the aspect or impact	What is the likelihood that the aspect or impact will cause an adverse environmental impact?	How long will the adverse environmental consequence persist in the environment.	The likelihood and severity of incurring fines or civil liability.	Includes technical difficulties of implementing the change and impacts to operational procedures.	The degree to which the impact will negatively impact the public's perception.	Would a change enhance the organizations sustainability?	Includes concerns of interested parties and cultural changes necessary to implement change.	Cost of change					
Activity	Aspect ID	Aspect	Sub-Aspect	(1-5)	(1-5)	(1-5)	(1-5)	(1-5)	(1-5)	(1-5)	(1-5)	(1-5)	(1-5)	Total	H M L	I L C O		Y/N
Energy Management	A1	Electrical	Lighting	5	3	3	3	3	1	5	5	5	5	36	H	I, C, O	2	Y
			Heating	2	3	1	3	2	4	1	4	2	5	25	M	C,O	3	Y
			Ventilation	4	3	3	3	3	4	4	2	3	5	32	M	L,C,O	2	Y
			Plug Loads	4	2	1	1	2	1	1	1	1	2	15	H	C,O	4	N
			Motors & Drives	3	3	4	3	3	4	2	4	3	5	30	H	C,O	2	Y
			Control Systems	3	2	3	3	2	4	2	4	2	5	29	M	L,C,O	3	Y
			Pumps	2	2	2	2	2	3	1	3	2	4	21	H	C,O	3	Y
	A2	Natural Gas & Steam	Heating Systems	4	3	2	2	2	4	2	4	4	5	30	H	I, C, O	2	Y
			Emergency Generators	3	3	3	3	2	4	2	3	2	3	25	H	I,L,C,O	3	Y
			Steam Traps	3	3	2	3	2	3	2	3	2	4	24	H	C,O	3	Y
			Building Envelope	3	3	2	3	2	2	2	3	3	4	24	M	I, C, O	3	Y
	A3	Water	Vehicle Washing	4	4	4	4	2	4	4	4	4	3	34	H	L, C, O	2	Y
			Oil Separator	4	4	4	4	2	3	3	4	3	3	32	H	L, C, O	2	Y
			Facility Washing	3	3	3	3	2	3	3	4	4	3	28	H	L,C,O	3	Y
			Parts Cleaning	3	3	3	3	2	3	3	4	3	3	29	H	L,C,O	3	Y
			Storm Water Run Off	3	4	3	5	3	4	4	4	4	3	34	M	L,C,O	2	Y
	A4	Fuel	Diesel Buses	4	5	4	4	4	3	5	5	5	5	42	H	I,L,C,O	1	Y
			CNG Buses	4	5	4	4	4	5	4	4	5	5	41	H	I,L,C,O	1	Y
			Non-Revenue Vehicles	4	4	4	4	4	4	4	4	5	4	39	H	I,L,C,O	2	Y
			UST/Groundwater	4	4	4	4	4	5	4	4	5	5	41	M	I,L,C,O	1	Y
			Storage/Dispensing	5	5	3	4	4	4	1	2	3	3	34	M	I,L,C,O	2	Y
Waste Management	A5	Recycling & Waste Removal	Metals	4	3	3	4	2	3	4	3	3	4	31	M	L,C,O	2	Y
			Batteries	4	4	3	4	2	3	4	4	3	4	33	M	L,C,O	2	Y
			Cardboard	4	2	4	3	2	2	3	4	2	3	26	H	C,O	3	Y
			Paper	4	2	4	3	2	2	3	4	2	3	26	H	C,O	3	Y
			Glass	3	2	3	3	2	2	3	4	2	4	25	H	C,O	3	Y
			Air Conditioners	3	3	3	4	2	3	3	4	3	3	29	H	L,C,O	3	Y
			Plastics	3	3	3	4	2	3	4	4	3	3	28	H	C,O	3	Y
			Toner Cartridges	4	3	4	4	2	3	4	4	3	3	31	M	C,O	2	Y
			Industrial Equipment	3	3	3	3	3	3	3	4	3	3	29	H	L,C,O	3	Y
			Aerosol Cans	3	3	4	4	3	3	4	3	3	4	32	H	L,C,O	2	Y
			Fluorescent Bulbs	4	4	3	4	4	3	4	3	3	4	34	M	L,C,O	2	Y
			Magnetic Ballasts	4	4	4	4	3	3	4	3	3	4	34	M	L,C,O	2	Y

Massachusetts Bay Transportation Authority

Verification	Originator	Revised	Approved	Issued
Title	Mgr. Energy Effic.			
Initials	MD			
Date	12/4/2013			

	Criteria	Description	Ranking Categories *1 (low) – 5 (high)*				
			1	**2**	**3**	**4**	**5**
Environmental Significance of Impact (s)			**NO CHANGE**				**MAKE CHANGE**
	Scale of Impact	What is the relative size of the aspect or impact?	*insignificant volume/quantity* The impact involves little or no resources and/or produces an insignificant amount of waste.	*low volume/quantity*	*medium volume/quantity but sporadic*	*medium volume/quantity but ongoing*	*high volume/ quantity* The aspect involves a large quantity of materials or resources or creates a continuous impact.
	Severity of Impact	How bad is the adverse environmental consequence caused by the aspect or impact?	*minimal impact* negligible impact on the environment produces a recyclable waste	*moderate impact but localized and readily containable* speculated to contribute to environmental damage produces a solid waste or universal waste	*moderate impact over multiple locations* damaging to the environment in limited situations or in combination with other pollutants produces a haz waste	*significant impact and/or regional* damaging to the environment produces a RCRA hazardous waste	*Extreme impact and/or potential for global impact* damaging to fish or animals produces an extremely hazardous waste

WARNING! *This document is uncontrolled when printed.*
Previous versions or printed copies may be obsolete. Verify current revisions using the EMS web site.

massDOT Massachusetts Department of Transportation Rail & Transit Division

Massachusetts Bay Transportation Authority

Verification	Originator	Revised	Approved	Issued
Title	Mgr. Energy Effic.			
Initials	MD			
Date	12/4/2013			

	Criteria	Description	Ranking Categories *1 (low) – 5 (high)*				
			1	**2**	**3**	**4**	**5**
			NO CHANGE				**MAKE CHANGE**
Environmental Significance of Impact (s)	Probability of Occurrence	What is the likelihood that the aspect or impact will cause an adverse environmental impact?	*very unlikely under any operating condition* so unlikely, it can be assumed an occurrence may not be experienced	*occurs during abnormal/emergency conditions/probability anticipated and managed* unlikely, but possible to occur in the life of an item	*occurs during small-medium new projects or routine maintenance activities* likely to occur sometime in the life of an item	*occurs during major new projects or major maintenance activities* will occur several times in the life of an item	*occurring during normal operating conditions* likely to occur frequently
	Duration of Impact	How long will the adverse environmental consequence persist in the environment?	*Spike situation extremely short-term duration within one day* material degrades rapidly in the environment	*less than one month* material may persist for several months involves renewal resources that are recycled	*one to six months* material may persist for several years involves non-renewal resources that are recycled	*less than one year* material degrades slowly in the environment involves renewable resources that are not recycled	*long-term duration greater than on year or continuous* impact persists in the environment involves non-renewable resources that are not recycled

WARNING! *This document is uncontrolled when printed.*
Previous versions or printed copies may be obsolete. Verify current revisions using the EMS web site.

massDOT Massachusetts Department of Transportation Rail & Transit Division

Massachusetts Bay Transportation Authority

Verification	Originator	Revised	Approved	Issued
Title	Mgr. Energy Effic.			
Initials	MD			
Date	12/4/2013			

	Criteria	Description	Ranking Categories *1 (low) – 5 (high)*				
			1	**2**	**3**	**4**	**5**
			NO CHANGE				**MAKE CHANGE**
Environmental Significance of Impact (s)	Potential Regulatory and Legal Exposure	The likelihood and severity of incurring fines or civil liability.	*No civil or criminal liability.*	*May expose the organization to minor administrative fines.*	*May expose the organization to administrative fines or minor civil liability.*	*Potential or significant administrative fines or civil liability.*	*Potential for large civil fines or criminal liability.*
	Ease of Changing Impact	What are the technical difficulties of implementing the change and what will be the impacts to operational procedures?	*easy to accomplish* requires no change in current procedures	*minor level of effort required* requires minor changes in operations	*moderate effort required* involves some additional effort to implement	*major effort required* involves significant additional effort to implement	*impact cannot be changed only managed* involves redesign or major change in maintenance procedures
	Effect on Public Image	To what degree will the impact negatively influence the public's perception?	*no effect* yawn	*minor / local scrutiny* special interest groups newsletter	*moderate public scrutiny manageable* community news letter	*intense local or regional scrutiny requiring more effort* small article inside section of newspaper	*extreme scrutiny – major facility profile impact* front page of newspaper
	Effect on Sustainability	Would a change enhance the organization's	*no effect*	*minimal effect*	*minor but notable effect*	*substantial effect*	*dramatic effect on sustainability*

massDOT Massachusetts Department of Transportation Rail & Transit Division

Massachusetts Bay Transportation Authority

Verification	Originator	Revised	Approved	Issued
Title	Mgr. Energy Effic.			
Initials	MD			
Date	12/4/2013			

	Criteria	Description	Ranking Categories *1 (low) – 5 (high)*				
			1	**2**	**3**	**4**	**5**
			NO CHANGE				**MAKE CHANGE**
Environmental Significance of Impact (s)		sustainability?	no relationship to sustainability	effects sustainability, but in an almost negligible way	effect sustainability, but not dramatically	a major, but not defining, variable in sustainability	a defining variable in sustainability
	Concerns of Interested Parties	Consider the concerns of interested parties and cultural changes necessary to implement the change.	*no concerns* limited number of parties	*minor interest at local level* limited number of parties	*moderate interest/manageable at local level* limited number of parties	*major interest at federal level more widespread* greater number of parties	*extreme/major impact* e.g., financing / litigation
	Cost of Changing Impact	What is the cost consideration of changing the impact?	*procedural* less than $1000	*minor process change* less than $25,000	*moderate process changes* less than 500k	*major process change* greater than $500k but less than $5m	*extreme* greater than $5m

WARNING! *This document is uncontrolled when printed.*
Previous versions or printed copies may be obsolete. Verify current revisions using the EMS web site.

Activity	Aspect ID	Aspect	
Energy Management	A1	Electrical	
	A2	Natural Gas & Steam	
	A3	Water	
	A4	Fuel	
Waste Management	A5	Recycling & Waste Removal	

Massachusetts Bay Transportation Authority

Aspect ID	Aspect	Activity to Reduce Costs	Annual Savings
A1	Electrical	Energy Conservation Projects	$178,508
A2	Natural Gas & Steam	Energy Conservation Projects	$122,515
A3	Water	Energy Conservation Projects	$35,000
A4	Fuel	Preventative Maintnenace	???
A5	Waste Management	Recycling & Waste Removal	???
		TOTAL	$336,023